HW 7

Problem 1 (8.19) Suppose $X_1, \ldots, X_n$ are IID $N(\mu, \sigma^2)$.

(a) If σ is known, what is the MLE of μ?

(b) If σ is known, is there any other unbiased estimate of μ with a smaller variance than the estimate in (a)? Why/why not?

Problem 2 (8.33) Suppose $X_1, \ldots, X_n$ are IID $N(\mu, \sigma^2)$ where both μ and σ are unknown. How should the constant c be chosen so that the interval $(-\infty, \bar{X} + c)$ is a 95% CI for μ? (I.e. c should be chosen so that $Pr(-\infty < \mu \leq \bar{X} + c)$.)

Problem 3 (8.75) Show that the gamma distribution belongs to the exponential family.